6.1 HOW CAN WE MEASURE THE WILDFIRE RISK IN OUR AREA?

EduFire Toolkit

Aim

To better understand wildfire risk based on its components (hazard, exposure and vulnerability). Measuring wildfire risk can help to understand which components most affect your community.

Description

A community's wildfire risk is the combination of likelihood and intensity (together called "hazard") and exposure and susceptibility (together called "vulnerability"). In this challenge, we invite you to explore a wildfire risk index used in your area. Understanding the wildfire risk in a given area helps decision-makers prepare for when a wildfire occurs.

Linked units

- Unit 1: Understanding your environment and connecting it to climate change impacts.
- Unit 2: History of fires
- Unit 3: Fire ecology I
- Unit 4: Fire ecology II
- Unit 6: Living wildfires as a global reality II

Type of results

- A 3D model
- An equation to measure wildfire risk as wildfire risk index

Material you may need

- Computer with internet and/or access to a library
- Paper, pen, glue, cardboard, cork, plasticine, recycled material, sand, wood, fabric, or using digital tools
- Projector

Scope of impact

- Classroom
- Educational centre.

Activity: Understand your risk

Identify which components most affect the wildfire risk of your community.

Tasks

1. In class, work in groups to discuss various land uses and natural processes. Identify the factors involved in the spread and combustion of wildfires. Create a hand-drawn concept map that illustrates the relationship between wildfires, spreading factors, and elements needed for combustion..(group)

2. In small groups, choose a real landscape nearby where you live to make a 3D model (create your landscape using cardboard, cork, plasticine, recycled material, sand, wood, fabric, or using digital tools). Choose different land uses to compose and configure, plan and urbanize your landscape (location of e.g., urbanizations, cultivated fields, forests, towns, train tracks, natural protected areas, roads, and industry). (group)

3. Classify the vulnerability of your landscape in front of large wildfires. When you designed your landscape, we had not yet worked on the wildfire risk and human activity (state of the vegetation, urbanization, or climate and ecosystem impact). This means that you may have located land uses, their characteristics or infrastructures that are vulnerable (critical or sensitive points). Now you need to identify which are the critical points in your county. Some ideas:

-Places with contour lines very close together on the map are very steep, and can cause...

-Urbanizations near forest areas are exposed...

-Areas of very dense forest and heavily loaded vegetation can cause...

-Cultivated fields…

-Excess industrial activity can cause...

-The more km of road, the more...

-Ravines can cause... in the wildfire behaviour.

Professions related to the topic

- Land planner
- Model maker
- Forest engineer
- Artist
- Ecologist
- Civil protection

Make a list of the critical points and key elements (vulnerabilities) in your region. (group/individual)

4. Parameterize a wildfire risk index. It is very difficult to compare which counties are more at risk and which are less. That's why, normally, when we want to make decisions, we use indexes. Now you will invent a mathematical formula to calculate the Wildfire Risk Index of a territory. Then try to know and analyse the real wildfire risk index of your territory, and put into practice (collaborate with experts, engage with local experts, such as fire ecologists, forest managers, or land-use planners, who have specialized knowledge in assessing wildfire risk. They can provide guidance and expertise in evaluating the risk index of your territory. Or consult with local authorities and organizations, reach out to local fire departments, forestry agencies, or environmental organizations that specialize in wildfire management.) (group/individual)

5. Share the results with your classmates, test the different equations in the different landscapes, and perform and analysis of the variations. You can expose the 3D models in your school and make a congress to explain your results with other courses. (group)